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Figure 1

| 102 | Specify the vehicle geometry |
104	Map the prohibited subzones
106	Map the routing points and connectors, particularly between zones
108	Map the electrical and electronic components
110	Synthesis of the routing of signals
112	Synthesis of the routing of power
114	Synthesis of the routing of ground links
116	Cost evaluation
118	Quality evaluation
120	Weight evaluation

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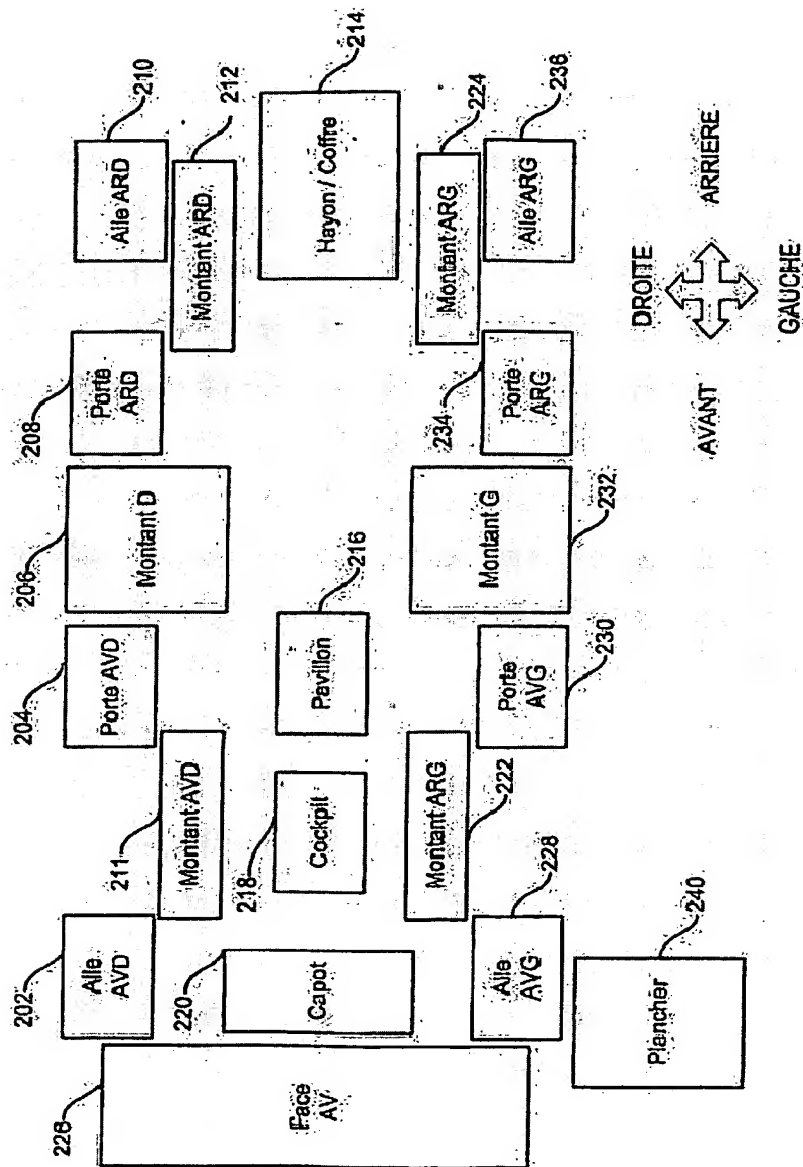
Figure 2

226	Front face	220	Hood	232	Left column
202	Right front fender	218	Cockpit	234	Left rear door
204	Right front door	216	Roof	236	Left rear fender
206	Right column	214	Tailgate / Trunk	240	Floorboard
208	Right rear door	222	Left rear column	DROITE	RIGHT
210	Right rear fender	224	Left rear column	AVANT	FRONT
211	Right front column	228	Left front fender	ARRIERE	REAR
212	Right rear column	230	Left front door	GAUCHE	LEFT

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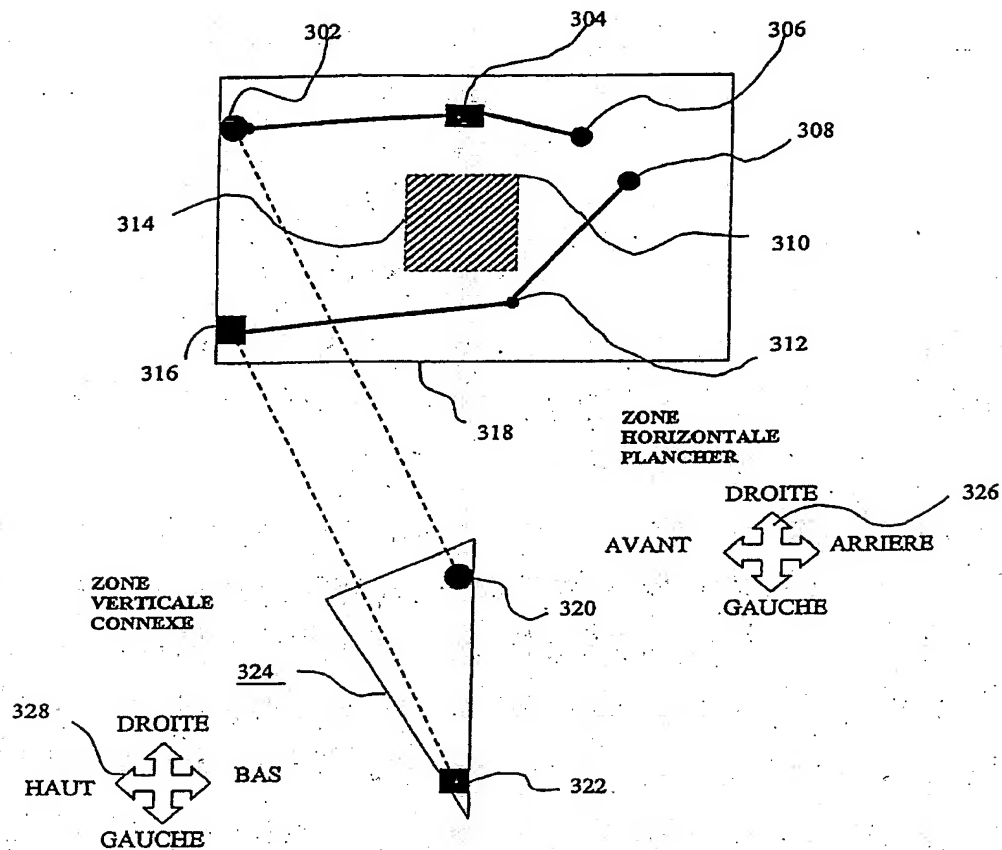
Figure 3

CONTIGUOUS VERTICAL ZONE		FLOORBOARD HORIZONTAL ZONE	
DROITE	RIGHT	DROITE	RIGHT
HAUT	TOP	AVANT	FRONT
GAUCHE	LEFT	GAUCHE	LEFT
BAS	BOTTOM	ARRIERE	BACK
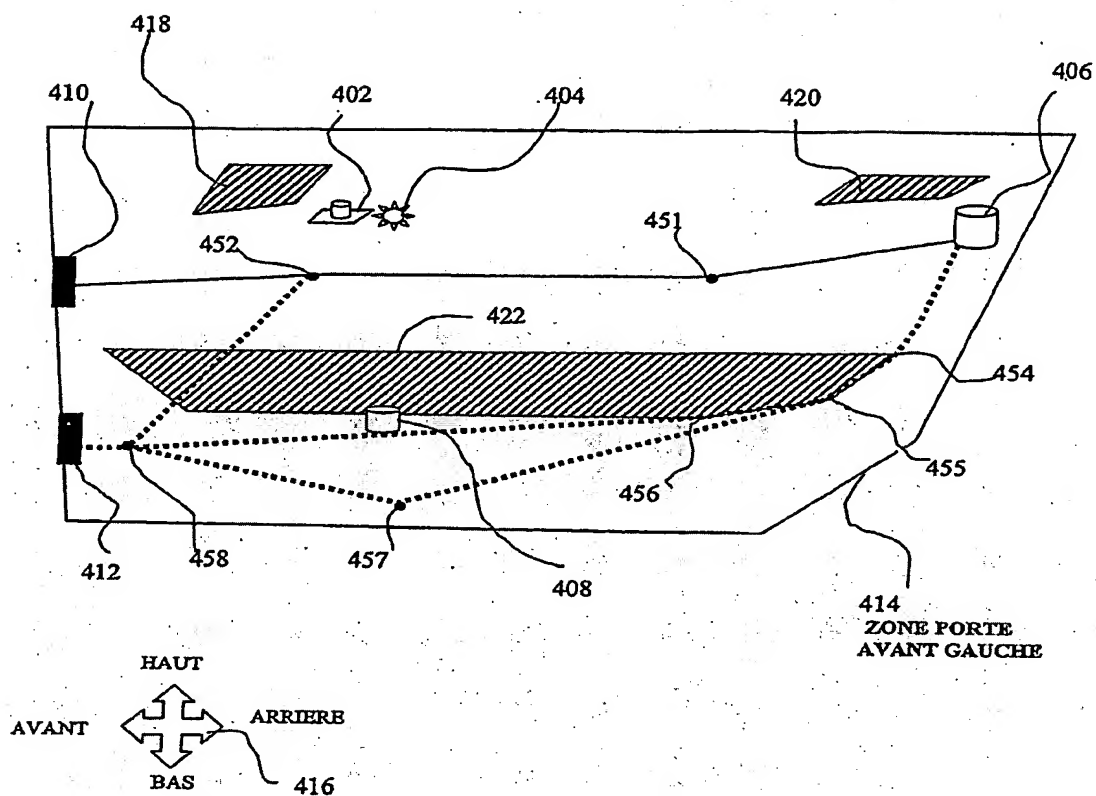
Figure 4

LEFT FRONT
DOOR ZONE
HAUT   TOP
AVANT   FRONT
BAS   BOTTOM
ARRIERE   REAR

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402   404   406

451

410

452

412

458

457

408

414

ZONE PORTE AVANT GAUCHE

502   416

504   HAUT

M   AVANT   ARRIERE

506

UCE   BAS

508

BFR

510   512

ZONE EXTRAIT COCKPIT
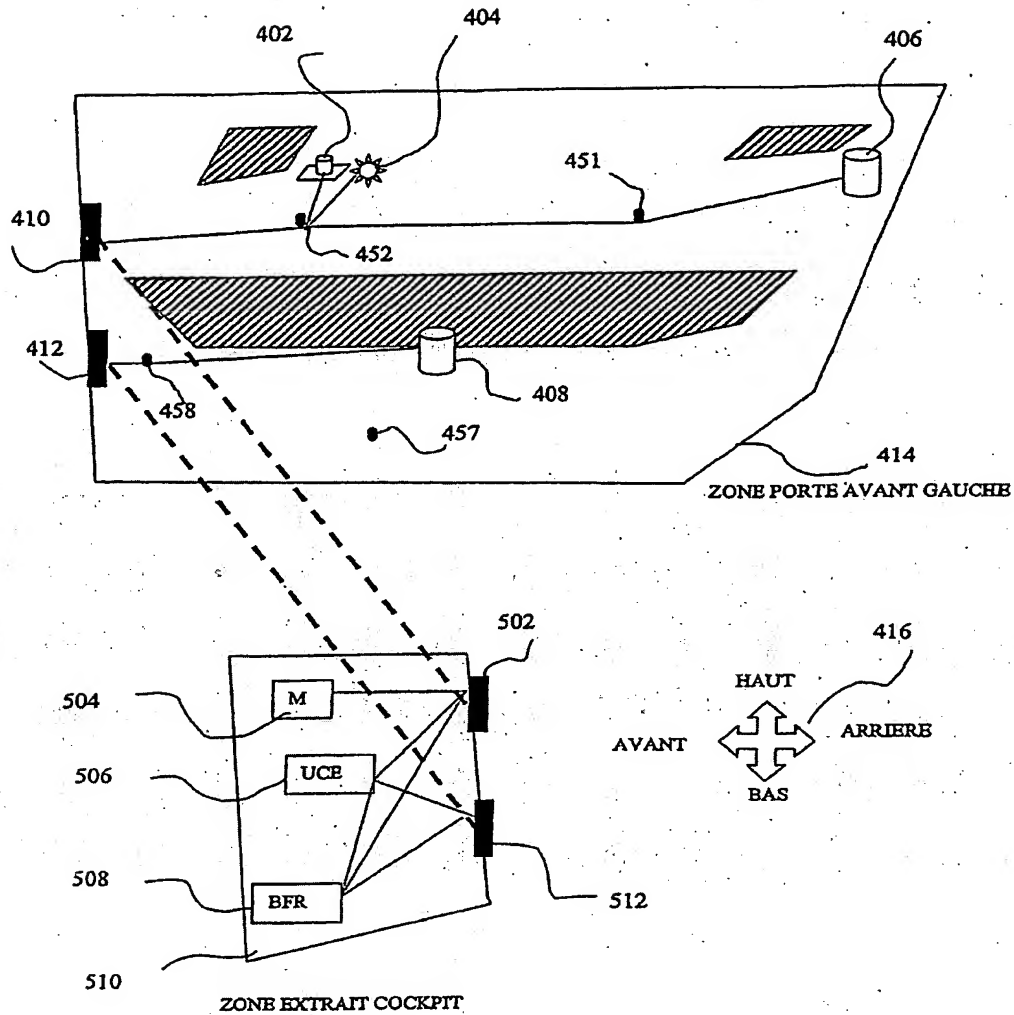
Figure 5

LEFT FRONT DOOR ZONE

504	Ground	HAUT	TOP
506	Electronic control unit	AVANT	FRONT
510	Fuse and relay box	BAS	BOTTOM
		ARRIERE	REAR

COCKPIT EXTRACT ZONE

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REQ FUNC MAP OPER HWD MSG

Tree (620):
- Vehicule Z23
  - Service Ouvrants
    - Variante Badge
      - CU Utilisateur ouvre coffre
        - Lien 1
        - Lien 2
      - CU Utilisateur ouvre porte
    - Variante Clef
    - Service Climatisation
    - Service Freins
- Vehicule Z24

CU Utilisateur ouvre coffre

PHASE 1

- Portes Ouvertes Coffre fermé (660)
- Tous ouvrants ouverts (664)
- Demande client ouverture coffre (668)
- Portes fermées Coffre fermé (661)
- Portes fermées Coffre ouvert (665)
- Demande client ouverture coffre (669)

PHASE 2

Figure 6
Use case: user opens trunk

660 Doors open, trunk closed
668 Client request to open trunk
664 All openings open
661 Doors closed, trunk closed
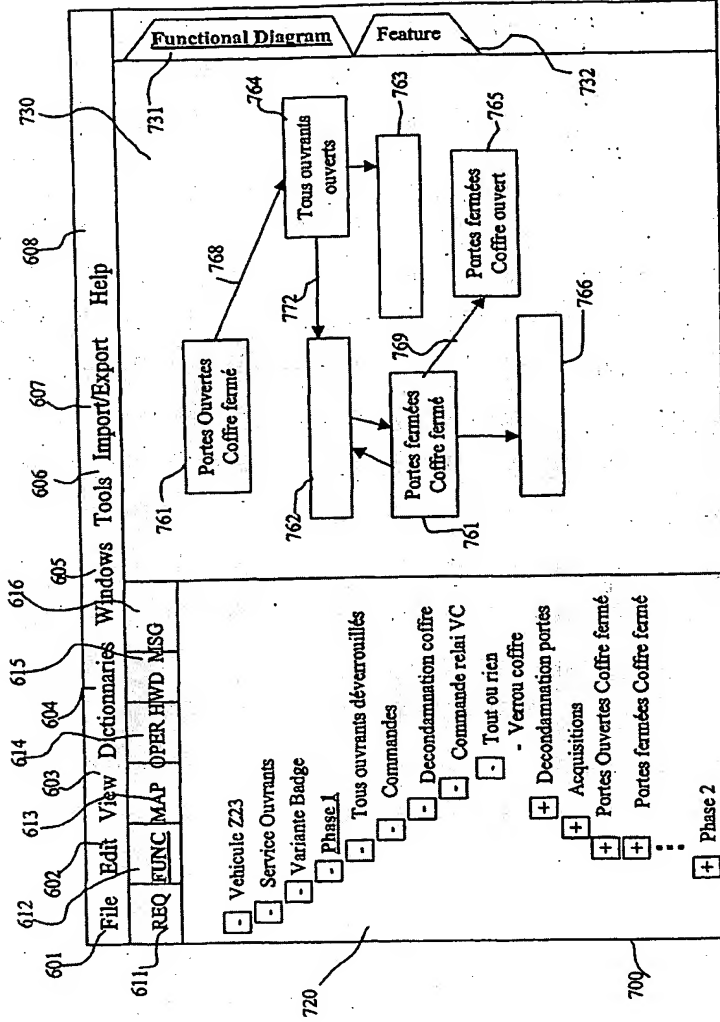669 Client request to open trunk
665 Doors closed, trunk open

Vehicle Z23
Openings service
Badge variant
Use case: user opens trunk
Link 1
Link 2
Use case: user opens door
Key variant
Air-conditioning service
Brake service
Vehicle Z24

Figure 7

761   Doors open, trunk closed
764   All openings open
761   Doors closed, trunk closed
765   Doors closed, trunk open

Vehicle Z23
Openings service
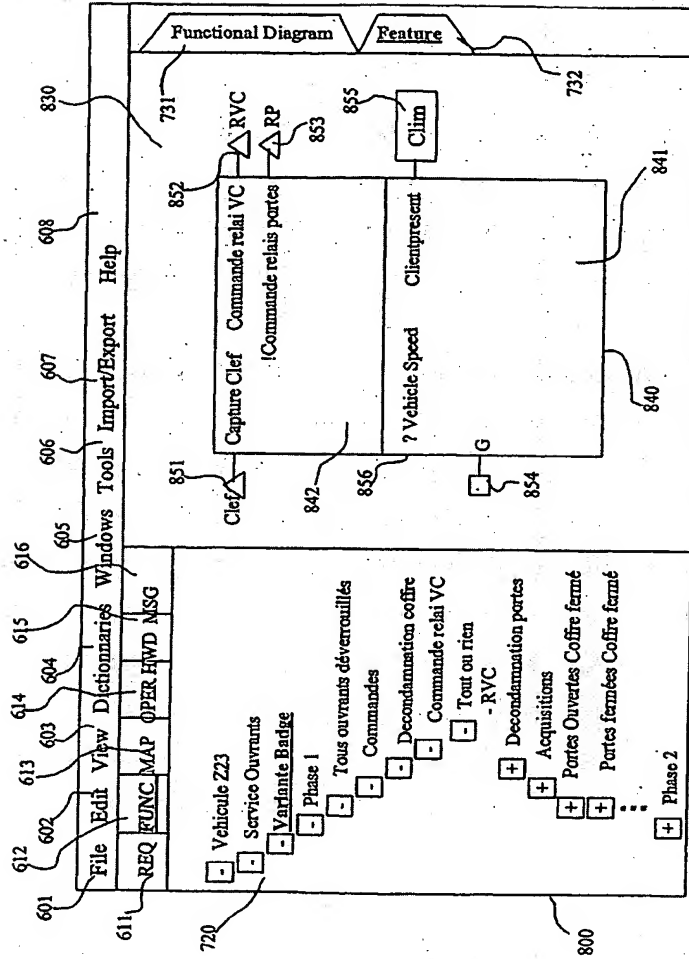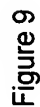Badge variant
Phase 1
All openings unlocked
Instructions
Unlatch trunk
Trunk-lock relay instruction
All-or-nothing
- Trunk lock
Unlatch doors
Acquisitions
Doors open, trunk closed
Doors closed, trunk closed
Phase 2

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REQ FUNC MAP OPER HWD MSG

601 612 602 613 603 614 604 615 605 616 606 607 608 611

- Vehicule Z23
  - Service Ouvrants
    - Variante Badge
      - Phase 1
        - Tous ouvrants déverrouillés
        - Commandes
          - Decondamnation coffre
          - Commande relai VC
            - Tout ou rien
            - -RVC
        - Acquisitions
          + Decondamnation portes
          + Portes Ouvertes Coffre fermé
          + Portes fermées Coffre fermé
          . . .
      + Phase 2

720

Functional Diagram   Feature

731   732

830

Clef   Capture Clef   Commande relai VC   △ RVC
851   !Commande relais portes   △ RP
              852   853
842   855
                                                   Clim
856   ? Vehicle Speed   Client present

G   841
854

840

Figure 8

851   Key
852   Trunk-lock relay
853   Door relay
855   Air conditioning
Capture ... = Key sensing
Commande .... = Trunk-lock relay instruction
                Door relay instruction

Vehicle Z23
Openings service
Badge variant
  Phase 1
  All openings unlocked
  Instructions
    Unlatch trunk
    Trunk-lock relay instruction
    All-or-nothing
    - Trunk-lock relay
    Unlatch doors
    Acquisitions
    Doors open, trunk closed
    Doors closed, trunk closed
  Phase 2

800

Figure 9

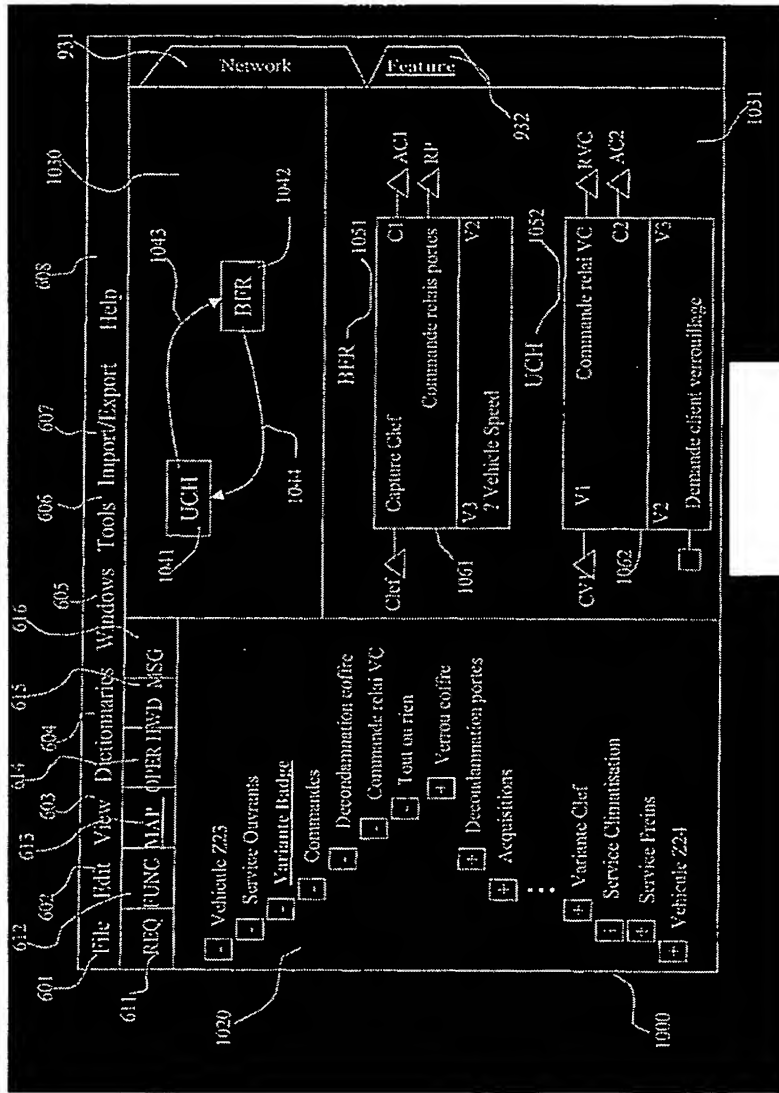UCH   Passenger-compartment control unit
BFR   Fuse and relay box

Vehicle Z23
Openings service
Badge variant
Instructions
Unlatch trunk
Trunk-lock relay instruction
All-or-nothing
Trunk lock
Unlatch doors
Acquisitions
Key variant
Air-conditioning service
Brake service
Vehicle Z24

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Figure 10

Vehicle Z23
Openings service
Badge variant
Instructions
Unlatch trunk
Trunk-lock relay instruction
All-or-nothing
Trunk lock
Unlatch doors
Acquisitions
Key variant
Air-conditioning service
Brake service
Vehicle Z24

UCH   Passenger-compartment control unit
BFR   Fuse and relay box
Clef   Key
Capture ... = Key sensing
Commande ... = Door relay instruction
RP   Door relay
Commande ... = Trunk-lock relay instruction
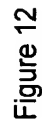RVC   Trunk-lock relay
Demande ... Client request to lock

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601 612 602 613 603 614 604 615 605 616 606 607 608

REQ FUNC MAP OPER HWD MSG

611

- Vehicule Z23
  - Noeud UCH
    - UCH HdG
      - Decondamnation coffre
        - Commande relai VC
          - Tout ou rien
          - [+] Verrou coffre
      - [+] Decondamnation portes
      - [+] ...
    - [+] UCH BdG
      - [+] ...
  - Noeud Contrôleur Injection

1120

1100

1130

Decondamnation portes

1142

Decondamnation coffre

1148

1144 1162 1146 1140

Figure 11

Vehicle Z23
Passenger-compartment control-unit node
Passenger-compartment control-unit HdG
Unlatch trunk
Trunk-lock relay instruction
All-or-nothing
Trunk lock
Unlatch doors
Passenger-compartment control-unit BdG
Injection controller node

1142   Unlatch doors
1148   Unlatch trunk

Figure 12

Vehicle Z23
Passenger-compartment control-unit node
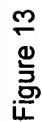**Passenger-compartment control-unit HdG**
 Trunk lock
  All-or-nothing
  Trunk-lock relay instruction
 Passenger-compartment control-unit BdG
 Injection controller node

Clef   Key
Capture ... = Key sensing
Commande ... = Trunk-lock relay instruction
RVC   Trunk-lock relay
Commande ... = Door relay instruction
RP   Door relay
Demande ... Client request to lock

Figure 13

Vehicle Z23
Nodes
  Passenger-compartment control-unit node
  BVA node

Components
  Accelerator pedal
  Front wipers

1346   Right front fender

Vehicle Z23
                Right
        Front
                Left   Rear
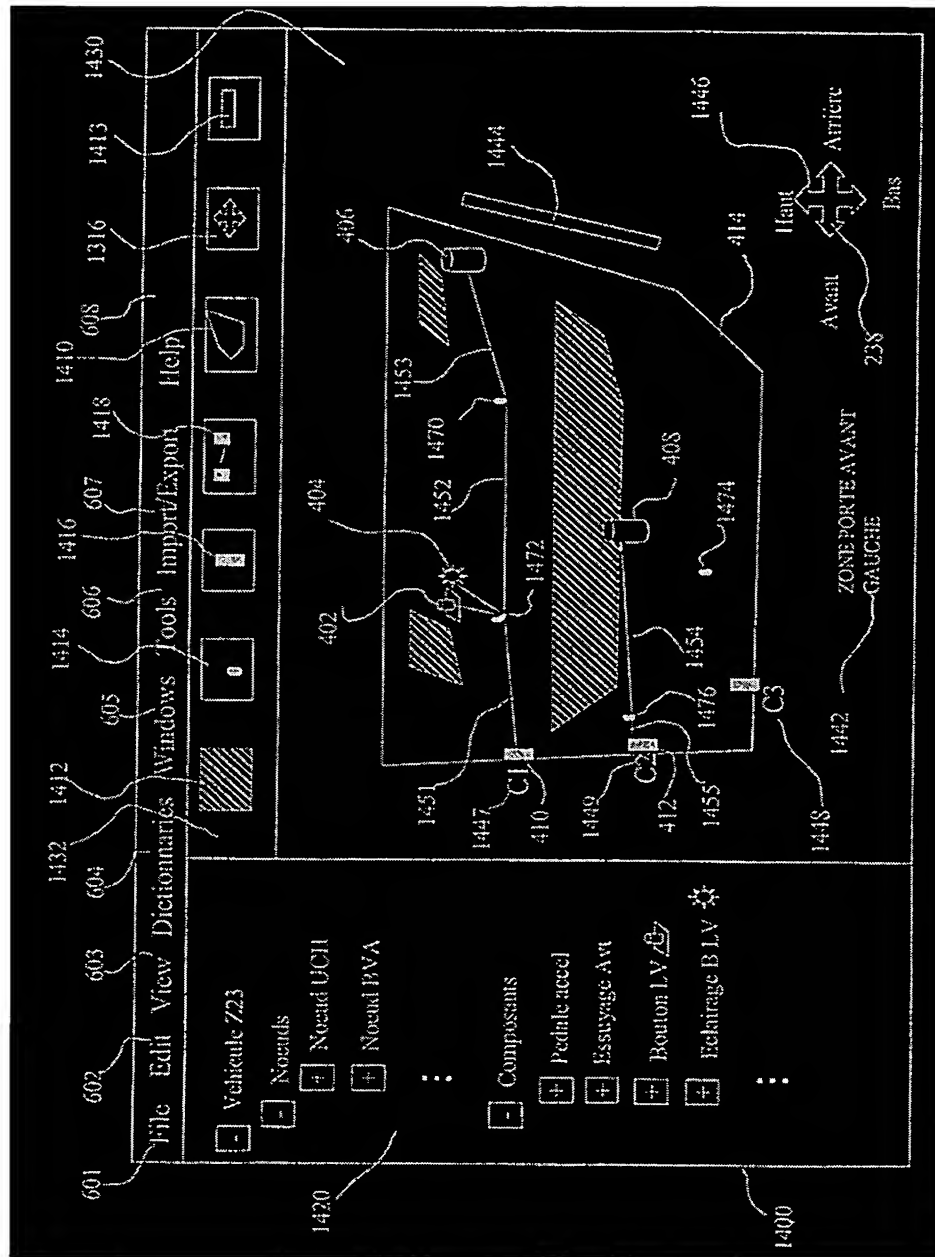
Figure 14

Vehicle Z23
Nodes
Passenger-compartment control-unit node
BVA node
Components
Accelerator pedal
Front wipers
Window lifter button
Light of window lifter button

LEFT FRONT
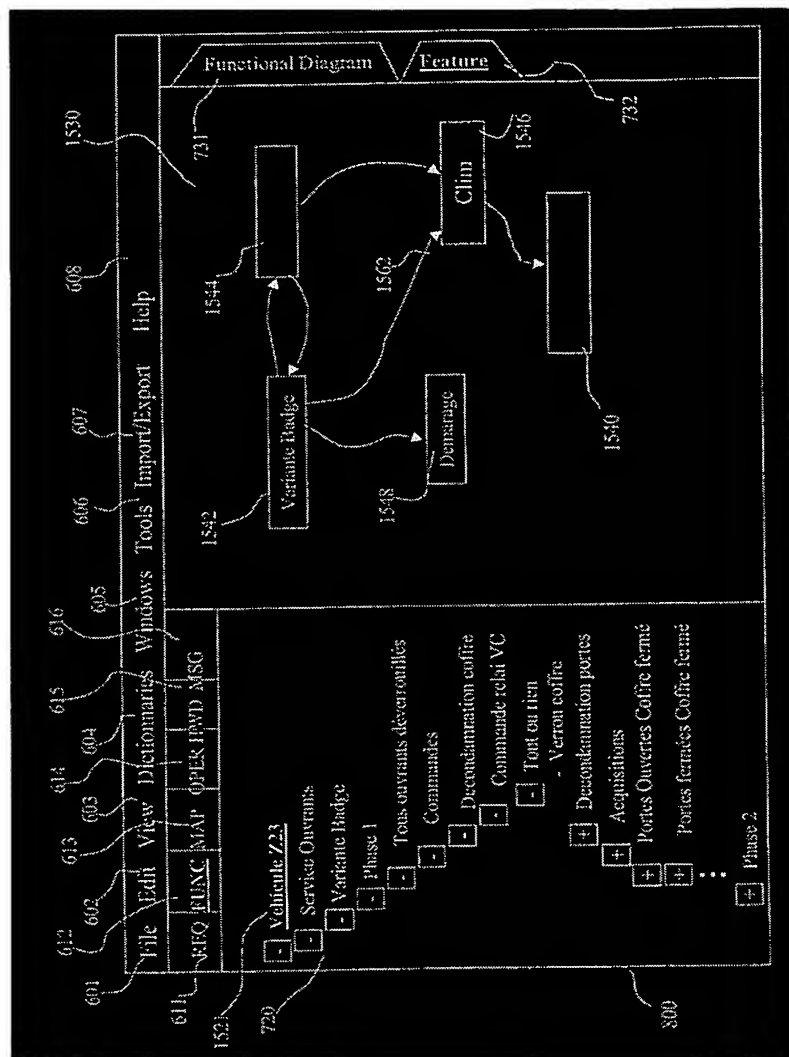DOOR ZONE

Front   Top   Rear
               Bottom

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Figure 15

Vehicle Z23
Openings service
Badge variant
Phase 1
All openings unlocked
Instructions
Unlatch trunk
Trunk-lock relay instruction
All-or-nothing
- Trunk lock
Unlatch doors
Acquisitions
Doors open, trunk closed
Doors closed, trunk closed
Phase 2

1542   Badge variant
1548   Starting
1546   Air conditioning
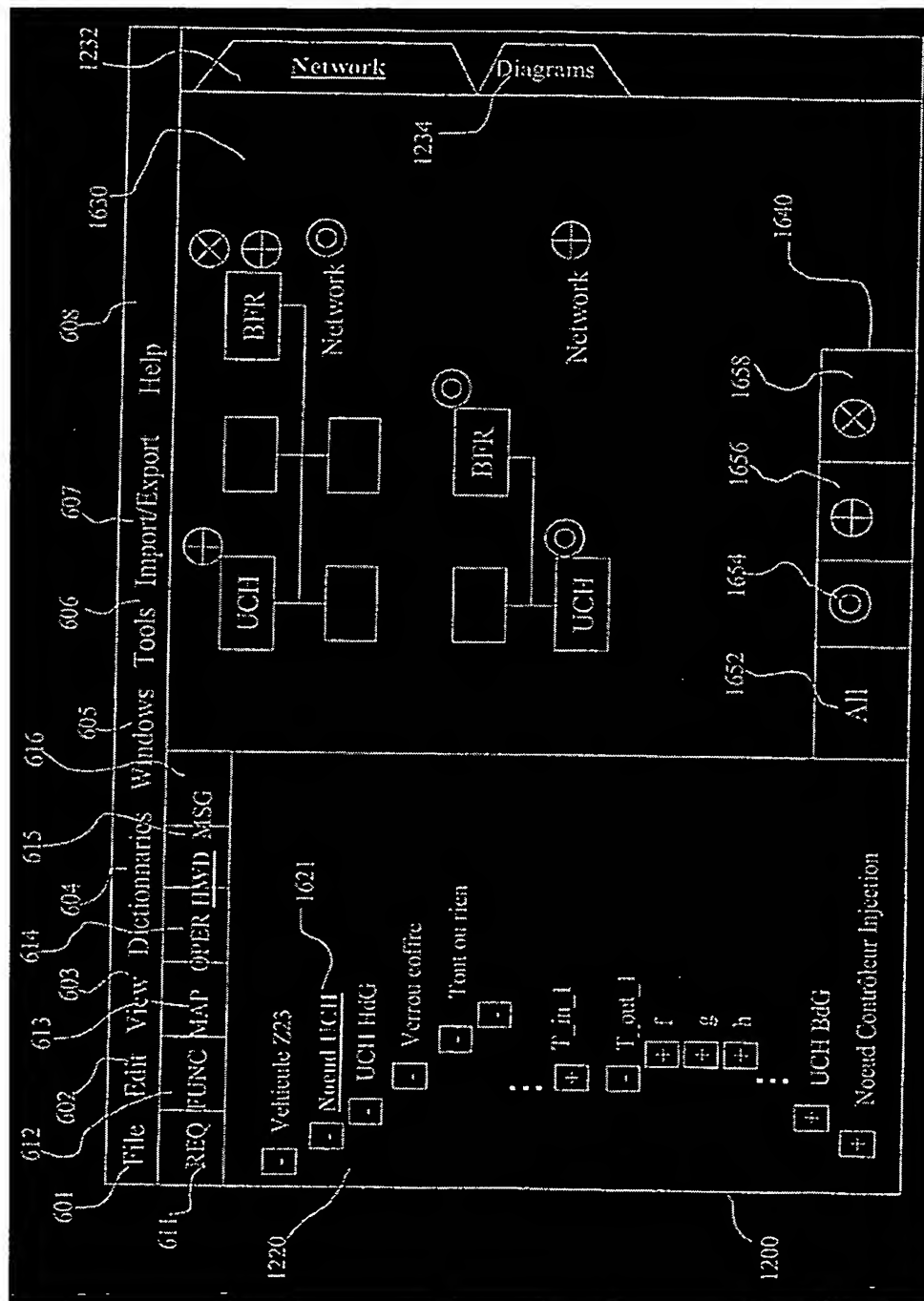
Figure 16

Vehicle Z23
Passenger-compartment control-unit node

Passenger-compartment control-unit HdG   UCH   Passenger-compartment control unit
    Trunk lock   BFR   Fuse and relay box
    All-or-nothing
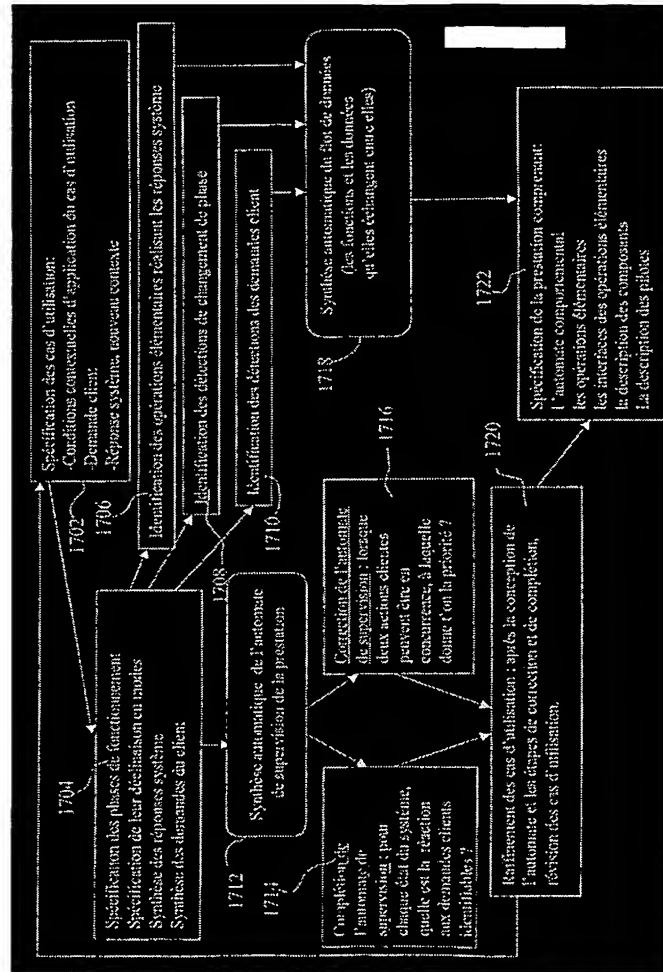Passenger-compartment control-unit BdG

Injection controller node

Figure 17

1702   Specification of use cases:
- Contextual conditions of application of the use case
- Client request
- System response, new context

1704   Specification of operating phases
Specification of their declinations in mode
Synthesis of system responses
Synthesis of client requests

1706   Identification of elementary operations for executing the system responses

1708   Identification of detections of phase change

1710   Identification of detections of client requests

1712   Automatic synthesis of the automaton for supervision of the service

1714   Supplementation of the supervising automaton: for each system state, what is the reaction to identifiable client requests?
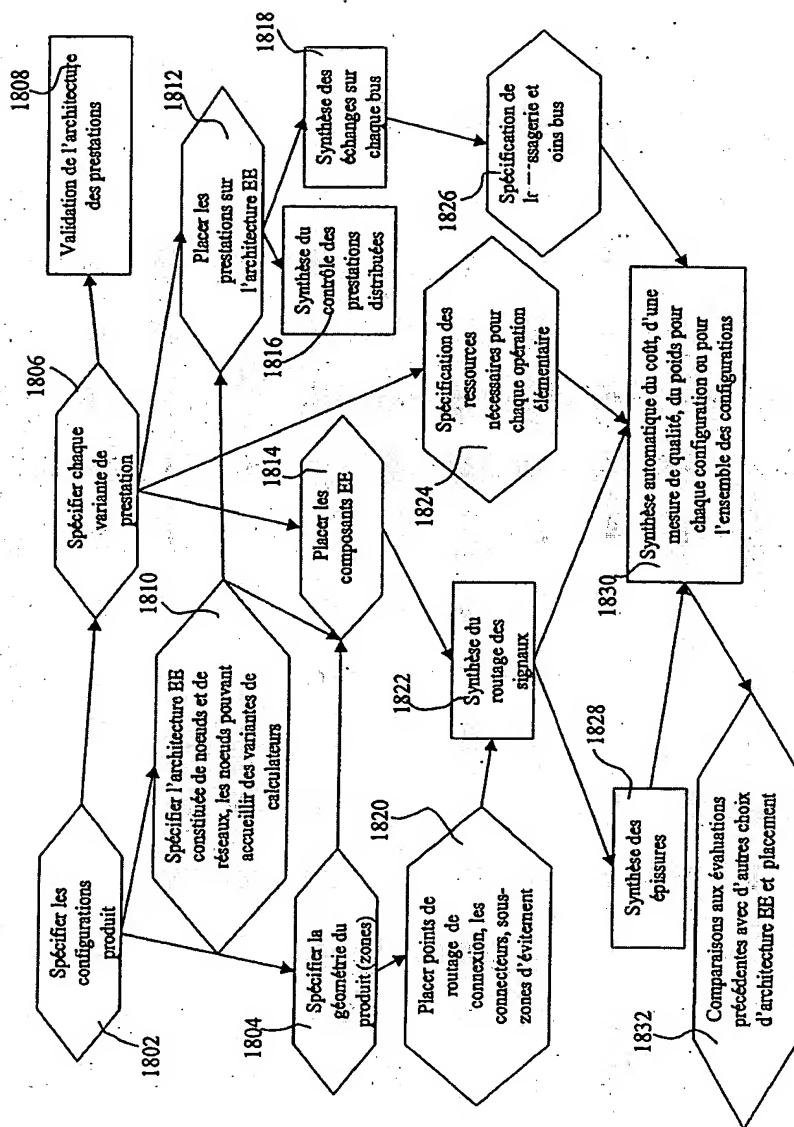
1716   Correction of the supervising automaton: when two client actions may be competing, which is given priority?

1718   Automatic synthesis of the data flow (the functions and the data that they exchange with one other)

1720   Refinement of use cases: after design of the automaton and the steps of correction and supplementation, revision of use cases.

1722   Specification of the service comprising:
the behavior automaton
the elementary operations
the interfaces of the elementary operations
the description of the components
the description of the drivers

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Figure 18

1802 Specify the product configurations
1804 Specify the product geometry (zones)
1806 Specify each service variant
1808 Validation of the service architecture
1810 Specify the electrical and electronic architecture composed of nodes and networks, the nodes being able to receive calculator variants
1812 Map the services onto the electrical and electronic architecture
1814 Map the electrical and electronic components
1816 Synthesis of control of distributed services
1822 Synthesis of routing of signals
1824 Specification of resources necessary for each elementary operation
1826 Specification of the electronic messaging service and bus needs
1828 Synthesis of splices
1830 Automatic synthesis of the cost, of a measure of quality, and of the weight for each configuration or for the set of configurations
1832 Comparisons with the preceding evaluations using other choices of electrical and electronic architecture and mapping